REMARKS

Claims 6633-6652 are currently pending in the case. Further examination and reconsideration of the presently claimed application are respectfully requested.

Applicants note that a Notice of Appeal is filed concurrently herewith under separate paper. The Examiner is respectfully requested to enter the Notice of Appeal on the date of filing if the arguments presented herein are not found to be persuasive.

Section 102 Rejections:

Claims 6633 and 6635-6651 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,900,939 to Aspnes et al. (hereinafter "Aspnes"). Claim 6634 was rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,563,586 to Stanke et al. (hereinafter "Stanke"). As will be set forth in more detail below, the § 102 rejections of claims 6633-6652 are respectfully traversed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP § 2131. The cited art does not disclose all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below.

The cited art does not teach a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer. Independent claim 6633 recites in part: "a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the specimen; and a processor coupled to the spectroscopic ellipsometer and configured to determine a critical dimension and a thin film characteristic of the specimen from the one or more output signals." Independent claim 6649 recites similar limitations.

As defined in the Specification:

> A critical dimension may include a lateral dimension of a feature defined in a direction substantially parallel to an upper surface of the specimen such as width 62 of feature 56 on

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> specimen 60. Therefore, a critical dimension may be generally defined as the lateral dimension of a feature when viewed in cross section such as a width of a gate or interconnect or a diameter of a hole or via. A critical dimension of a feature may also include a lateral dimension of a feature defined in a direction substantially perpendicular to an upper surface of the specimen such as height 64 of feature 56 on specimen 60. (Specification -- page 74, lines 17-23.)

Therefore, a "critical dimension" as defined in the Specification does not include a thickness of a film. In contrast, the Specification states that "Examples of thin film characteristics include, but are not limited to, a thickness, an index of refraction, and an extinction coefficient." (Specification -- page 250, lines 11-12.) Therefore, a film thickness is defined in the Specification as a thin film characteristic, as presently claimed.

The definition of the term "critical dimension" provided in the Specification is consistent with the accepted meaning of the term known in the art. For example, "critical dimensions (CDs)" are defined as "The widths of lines and spaces of critical circuit patterns as well as the area of contacts" by Peter Van Zant, Microchip Fabrication: A Practical Guide to Semiconductor Processing, Fourth Edition, New York, New York, McGraw-Hill, 2000, p. 598, a copy of which is submitted herewith for the Examiner's reference. In addition, S. Wolf et al., in Silicon Processing for the VLSI Era: Volume 1 - Process Technology, Sunset Beach, California, Lattice Press, 1986, on p. 447, a copy of which is submitted herewith, states that "There are two aspects of feature sizes that must be controlled in the lithographic/etching process: a) the absolute size of a minimum feature, including linewidth, spacing, or contact dimensions (also referred to as a *critical dimension* of CD)." (emphasis in original). In addition, in the Handbook of Silicon Semiconductor Metrology, Alain C. Diebold, New York, New York, Marcel Dekker, Inc., 2001, on p. 377, a copy of which is submitted herewith, M. Cresswell et al. state that "Usually, test patterns include features that have drawn linewidths matching the minimum of the features being printed in the circuit. These linewidths are typically referred to as the process's *critical dimensions* (CDs)." (emphasis in original). Therefore, consistent with the definition of critical dimension provided in the Specification, the definition of critical dimension accepted in the art does not include a thickness of a film. A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. MPEP 2173.01. It is appropriate to compare the meaning of terms given in technical dictionaries in order to ascertain the accepted meaning of a term in the art. *In re Barr*, 444 F.2d 588, 170 USPQ 330 (CCPA 1971). MPEP 2173.05(a).

The Final Office Action notes on page 7 that the Specification states:

> critical metrics of a lithography process may include a property such as, but are not limited to, critical dimensions of features formed by the lithography process and overlay misregistration. Critical metrics of a process, however, may also include any of the properties as described herein including, but not limited to, a presence of defects on the specimen, a thin film characteristic of the specimen, a flatness measurement of the specimen, an implant characteristic of the specimen, an adhesion characteristic of the specimen, a concentration of elements in the specimen. (Specification -- page 246, lines 1-8.)

Therefore, the Specification defines the term "critical metric" as a critical dimension or a thin film characteristic, and a thin film characteristic is defined in the Specification as a thickness. Consequently, the Specification defines a critical metric as a critical dimension or a film thickness. However, this definition of a critical metric does not define a critical dimension as including a film thickness. For example, a "metric" is commonly defined as "A standard of measurement." *See*, for example, Webster's II New Riverside University Dictionary, Boston, Massachusetts, Houghton Mifflin Company, 1984, p. 748, a copy of which is submitted herewith. As a result, the Specification defines a critical standard of measurement as a critical dimension or a film thickness. However, this definition of a critical metric cannot be interpreted as defining a critical dimension as including a film thickness since a "critical dimension" and a "critical metric" are clearly two different terms having different meanings.

For at least the reasons provided above, therefore, the term critical dimension is not defined in the Specification as a film thickness. In addition, for at least the reasons provided above, the usual meaning of the term critical dimension accepted in the art is not a film thickness. Therefore, the claimed critical dimension cannot be given a meaning as suggested in the Final Office Action of a film thickness since that meaning of the term critical dimension would be repugnant (i.e., inconsistent) with its usual meaning. While a term used in the claims may be given a special meaning in the description of the invention, generally no term may be given a meaning repugnant to the usual meaning of the term. *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). MPEP 2173.05(a).

Aspnes discloses a thin film optical measurement system and method with calibrating ellipsometer. Aspnes, however, does not disclose a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer. For example, Aspnes states that "To determine this information, the processor 48 takes the difference between the sums of the output signals of diametrically opposed quadrants, a value which varies linearly with film thickness for very thin films." (Aspnes -- col. 4, lines 30-34.) Therefore,

Aspnes discloses a processor that is configured to determine film thickness of a specimen. However, Aspnes does not disclose a processor that is configured to determine a critical dimension of the specimen. In addition, as set forth in detail above, the claimed critical dimension does not include a film thickness. Therefore, Aspnes does not teach determining a critical dimension as presently claimed. As such, Aspnes does not teach a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer, as recited in claims 6633 and 6649. Therefore, Aspnes does not teach all limitations of claims 6633 and 6649.

Stanke discloses a wafer metrology apparatus and method. Stanke, however, does not disclose a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer. For example, Stanke states that "Following collection of a reference spectrum a data reduction algorithm utilizing the reference spectrum is used to calculate film thickness from spectra collected from wafer 420." (Stanke – col. 14, lines 17-20.) Therefore, Stanke discloses a processor that is configured to determine film thickness of a specimen. However, Stanke does not disclose a processor that is configured to determine a critical dimension of the specimen. In addition, as set forth in detail above, the claimed critical dimension does not include a film thickness. Therefore, Stanke does not teach determining a critical dimension as presently claimed. As such, Stanke does not teach a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer, as recited in claims 6633 and 6649. Therefore, Stanke does not teach all limitations of claims 6633 and 6649.

For at least the aforementioned reasons, claims 6633 and 6649 are not anticipated by the cited art. Therefore, claims dependent therefrom are also not anticipated by the cited art for at least the same reasons. Accordingly, removal of the § 102 rejection of claims 6633-6652 is respectfully requested.

Allowable Subject Matter:

Claim 6652 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim. Applicant sincerely appreciates the Examiner's recognition of the patentable subject matter recited in claim 6652.

CONCLUSION

This response constitutes a complete response to the issues raised in the Final Office Action mailed August 24, 2004. In view of remarks traversing rejections, Applicants assert that pending claims 6633-6652 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees, which may be required, or credit any overpayment, to Conley Rose, P.C. Deposit Account No. 50-3268/5589-02326.

Respectfully submitted,

Ann Marie Mewherter
Reg. No. 50,484
Agent for Applicant(s)

Conley Rose, P.C.
P.O. Box 684908
Austin, TX 78768-4908
Ph: (512) 476-1400
Date: 10-14-04